AN ANALYSIS OF THE RELATION OF THE RATES ON LIVE STOCK AND THE PRODUCTS OF LIVE STOCK, BASED ON THE COST OF CARRIAGE.

The testimony of A. B. STICKNEY,
President of the

CHICAGO GREAT WESTERN RAILWAY COMPANY,

in the trial in the United States Court, September, 1905, of the case of:

INTERSTATE COMMERCE COMMISSION

vs.

THE CHICAGO GREAT WESTERN RAILWAY COMPANY, AND OTHER COMPANIES.

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There is a distinct difference, both in respect to the principle involved and the cost of transportation, between through shipments of live stock from markets to markets, and local shipments picked up at local stations and transported to market.

The basic principle of the local live stock rates is the cost of the facilities required, and cars used, and of the terminal work, plus the cost of hauling. The cost of the facilities, cars used and terminal work is nearly the same in both the short and the long haul, hence the approximate cost of facilities, cars and terminal work should be reflected in the tariffs of charges for the shortest haul, which are always, and should always be, relatively to the distance hauled, much larger than for long hauls. Therefore, long haul tariffs of rates should be the short haul rates plus a practically constant quantity for each unit of additional haul. This is the principle, when undisturbed by competition, of the local tariff, and when built upon this principle every station receives the advantage to which it is entitled by reason of its locality in respect to distance from market, and in no other way can such advantage of station location be respected and maintained.

For example:—From Gretna, a station on the Chicago Great Western Road, 26 miles west of Chicago, the nearest station from which any live stock was shipped in the year 1905, the rate on cattle is 6½ cents to Chicago. This rate is gradually built up until it reaches 23½ cents at Council Bluffs on the Missouri River, 500 miles west of Chicago. On the west side of the river the 23½ cent rate is gradually built up, on, say, the Union Pacific road to, say, Elkhorn, Nebraska, 27 miles west of the River, where the rate to Chicago is 27½ cents.

As the Union Pacific Company has no road east of the River, it presents the problem of how the Union Pacific Company can ship live stock from Elkhorn to Chicago at the rate of 27½ cents. If the Union Pacific Company hauls it to the Missouri River, and pays the railway east of the River its local rate—23½ cents—it only leaves 4 cents for the use of the Union Pacific facilities at Elkhorn, the use of cars and terminal work, plus the cost of hauling 28 miles,—which is inadequate.

On the other hand,—if the Union Pacific Company makes the rate between Elkhorn and

Chicago, say, 6½ cents above the 23½ cent-rate from Council Bluffs to Chicago, the tax imposed upon the producer of cattle at Elkhorn, and upon the producers of cattle in all the territory west of the Missouri River, for transporting their products to Chicago is altogether too much, compared with the tax imposed upon the producer at Council Bluffs and the territory east of the Missouri River, and would not give the producers at Elkhorn and the territory west the advantage of location to which they are entitled, in respect to the distance from market.

The point presents the necessity of making the through rate from the Missouri River markets to Chicago lower than the local rate, to prevent discriminations between producers and localities.

In fact, the through rate from the Missouri River to Chicago cannot, in a proper sense, be regarded as a rate, but it is simply a division of the actual, or local, rate as between the railway companies east and west of the River.

The companies east of the River admit the principle that the companies west of the River are entitled to a larger rate in proportion to the distance hauled, and therefore accept a proportion of the rate which is less than their local rate from the Missouri River to Chicago.

The rate on the product of live animals from the packing houses on the Missouri River to Chicago is essentially the same—a division, as between railway companies, of the rate; in effect, allowing to the lines west of the River practically their local rates for bringing to the packing houses the live animals, and accepting the balance of the rate for hauling the product to Chicago.

From these premises it seems evident that if we desire to compare the rate on live stock with the rates on the products of live stock, to determine their relativeness, we should compare the divison of rate which the lines east of the River accept for transporting the live stock, with the division of the rate which the lines east of the River accept for transporting the products of animals.

Such a comparison will show that these rates, as they now exist, are in line with the holdings of the Interstate Commission in this case,—viz.: that the rates per cwt. on live stock should probably be less, but in no event should they be more, than the rate on the products of live stock, as the following schedule of rates which have existed for several years on cattle, hogs, packing house products and fresh meats from the *Market Towns* of Kansas City, St. Joseph and Omaha to the Market town of Chicago,—i. e.: from market to market,—shows conclusively:

	Schedule of Rates			
From	Cattle	Hogs	Pkg. House Products	Fresh Meats
Kansas City, St. Joseph and Omaha	from 14c to 22c	from 16½ to 22c	20c	20c

The rate on both cattle and hogs is the actual difference between the rates from the point of origin to Chicago, and the short rates from points of origin to the Missouri River, which gives varying rates from the Missouri River markets to Chicago on live stock. The rate on the product of animals is a fixed rate, but based upon the average of the varying rates, in effect the same principle.

If the shipments are destined to points east of Chicago the rate is made on a so-called "Mississippi River basis," which reduces the above rates from Missouri River points on all of the commodities,—the cattle and hogs as well as the packing house products and fresh meats—1½c per cwt., making the following schedule from Missouri River Points:

From	Cattle	Hogs	Pkg. House Products	Fresh Meats
Kansas City, St. Joseph and Omaha.	from 12½c to 20½c	from 15c to 20½c	18½c	18½c

It is now my purpose to show by analysis that such divisional rates are not equivalent rates, based on the cost of carriage, but that the live stock rates are too low, and that as a matter of fact live stock rates, based on the cost of carriage, instead of being less per cwt. should be more per cwt. than the rates on the products of live stock.

For convenience, I will use the average of of the varying rates on live stock, disclosed in the first schedule, which would be: From Kansas City, St. Joseph and Omaha to Chicago 18 cents per cwt. on cattle and 19¼ cents per cwt. on hogs.

As the railway cannot haul live stock, or the product, without hauling a car, and as it costs as much to haul a ton of car as a ton of its load, and as live stock is hauled in cars whose average weight on the Chicago Great Western line is 27,500 lbs., and the product is hauled in refrigerator cars having a weight, including ice, of 41,000 lbs., and as the average load of cattle is is 21,513 lbs., of hogs only 16,635 lbs., of packing house products 31,632 lbs., and fresh meats only 22,414 lbs., these varying weights of car and load must be taken into consideration.

Then there are certain burdens which pertain to the transportation of live stock, which do not pertain in the same degree to the transportation of the products, which must also be taken into the account before the true comparison of cost can be made.

In the analysis, I will speak of these unequal burdens first.

The packing house products and fresh meats are not hauled in cars owned by the railway, but in refrigerator cars owned by the packers, and the expenses which are most talked about is the mileage paid for the use of the refrigerator cars.

In order to understand this mileage arrangement, it must be born in mind that the mileage paid covers the use of the car and its interest account, and the entire cost of renewals and the cost of repairs to such refrigerator cars "necessitated by ordinary wear and tear in fair service." In addition to the mileage, the railway company pays "for damage done to any of the cars by unfair usage, derailment or accident," which on the Chicago Great Western in the year 1905, averaged .... .1c per mile.

The mileage paid is ....1.0c per mile.

Total payment for *use of car, renewals and repairs*.........................1.1c per mile.

The packers own these cars; they load them and unload them, and, if not required for use between Chicago and Missouri River points, they can use them in distributing their products over other lines. So they are loaded and unloaded promptly and kept almost continuously in motion, which enables them to make a much larger daily mileage than it is possible for railway companies to make with their own cars. It is probable that the average mileage of these refrigerator cars is, approximately, 100 miles per day, while the average mileage of railroad cars of all descriptions is known to be about 22 miles per day, and the average mileage of stock cars is less than 22 miles per day. On account of superior administration, the packers make a profit (although not as large as is generally supposed) from the ownership of such cars, by leasing them on the terms mentioned. But (as I will show later) no railway could make a profit on such terms. No railway could maintain such superior administration, because, not owning the output, or controlling its routing, one day it would be called upon to furnish a large number of cars, the next day few or none, with no way to tell in advance on what days the demand would be large, and in order to supply the largest day's demand a great many cars would stand idle on the days of smaller or no demand.

This proposition seems to be corroborated by the movement of stock cars, the actual loading and unloading of which consumes no more time than the actual loading and unloading of packing house products, and therefore it would appear that stock cars could be kept as continuously in motion between markets in the through stock transportation as the packers' refrigerator cars. But this is not the fact, for the reason, among others, that the amount of stock to be moved between such points is not, like the packing house products, approximately a constant quantity day after day. Some days and some months there is a large demand for cars; other days and in other months practically no demand whatever. Evidently the railways must own cars enough to supply the largest demand. And as the railway companies have no control over the routing of such live stock, they cannot tell in advance whether the live stock which is to be moved will be routed over their line or over the line of their competitors, so they can never tell in advance what the demand for cars will be from day to day. Therefore, a large number of stock cars are standing empty frequently for days, and even weeks, in succession, awaiting loads.

To illustrate how irregular this movement is, the following data is taken from the records of the Chicago Great Western Railway Company, showing the actual movement for last year of live stock from the South St. Paul stock yards to the Chicago stockyards:—July 62 cars; August 264; September 240; October 222; November 195; December 45; January 57; February26; March 17; April 208; May 47; June 17;—Total 1,400 cars.

It will be noticed that more than half—726 cars—moved in the three months of August, September and October, most of which was live stock direct from the ranges. The total amount of such stock, which was shipped from South St. Paul to Chicago during those three months, was 7,374 cars. This stock came into South St. Paul from the west,—some days 500 cars, some days none,—and after its arrival commenced the scramble between the different railway companies for its further shipment to Chicago. In the scramble the Great Western got about ten per cent.

The shipments were just as irregular in respect to days of shipment as by months. The first day of August the Great Western got 13 cars; in the next six days 6 cars, or an average of one car per day; in the next day it got 17 cars; the next day 23 cars; the next 13 cars, and in the following three days none; and so on during the month.

The enormous waste, due to such irregular and uncertain movement, may be seen from the following astounding statement of facts:

The Chicago Great Western Railway Company moved during the last fiscal year an aggregate of 15,134 cars of live stock an average distance of 197 miles, an average of less than 42 cars per day. It owns 686 stock cars, which would seem to be enough to move 42 cars per day an average distance of 197 miles. But, as a matter of fact, it had to rent, from private car lines, cars to move 54 per cent of said live stock. That is to say,—686 cars, under existing conditions, will move only an average of 19.74 cars of live stock per day an average distance of only 197 miles, equal to only 5.8 miles per day per car.

These stock cars were rented under the same conditions, in respect to repairs, maintenance and mileage, as the refrigerator cars, except that the mileage paid for stock cars was .6c per mile instead of 1c per mile. The cost of a stock car is about $600.00, while the cost of a refrigerator car is about $1,200.00.

Knowing that we were able to rent these cars at .6c per mile, and supposing that the private car lines found it profitable, in my testimony before the Interstate Commerce Commission, based upon this fact, without much investigation, I estimated that it cost the railway companies in interest, depreciation and renewals about .6c per mile for the use of their own cars. But upon examination of actual accounts I find that the actual cost is much larger.

I am unable to separate the cost of repairs of stock cars from the cost of repairs of other freight cars, but I find that the average cost of labor and material only of repairing the total freight equipment of the Chicago Great Western Railway Company is about .4c per freight car mile. I am able to find data in only one report of the larger railway companies, which I have been able to examine, upon which to make the same calculations, which gives practically the same result.

If it costs the private car lines as much to make their repairs, it is evident their profits are not excessive.

There are conditions, however, pertaining to the private stock car mileage, which tend to increase their average daily mileage and therefore reduce the average cost per mile of repairs. For illustration:—the stock cars which were rented by the Chicago Great Western Railway were largely the cars which had been sent to be loaded at the western ranges, making long hauls —partly over the Great Western lines and partly on the Pacific lines—during the season of range stock movement, hence their average mileage would be larger than the average daily mileage of the railway stock cars: And then between Chicago and the east they get long runs, which make larger daily average mileage than the railway stock cars, and to this extent the cost of their repairs per mile should be less than the cost of repairs of stock cars owned by the railway companies per mile.

In discussing the private car lines, and especially in the discussion of the packing house rates between the Missouri River and Chicago, much has been made of the mileage of 1c per mile paid for the use of refrigerator cars, which is regarded as excessive, while it is, apparently, assumed that live stock hauled in the railway company's own cars bears no such burden.

This is a mistake. When the railway company transports freight in its own cars, instead of paying the fixed amount per mile for the *use, renewal and repairs* of the car, it pays the interest on the cost of the car, and it pays the expenses, whatever they may be, of renewals and repairs.

Now, I will state the account of the Chicago Great Western of these burdens in respect to all of its freight, it being impossible to distinguish between live stock and other freight, because its stock cars are used to some extent in other than live stock Shipments.

Its freight car equipment has cost $5,583,425.75 of actual cash. The interest on this amount for one year at 5 per cent is................$279,161.25

It is evident that no amount of money spent in repairs will prevent all of this equipment in the course of years, becoming superannuated and sent to the scrap heap. As there are no cars in use on any of the railways in the United States to-day which were in use twenty-five years ago, it is fair to estimate the lifetime of a car at, say, twenty-five years, which would make the annual depreciation 4 per cent. 4 per cent on the cost is equal to................ 223,337.00

The amount expended for labor and material only, in repairs of freight cars during the fiscal year, was...... 307,211.90

In order to make these repairs, and the repairs on its locomotives, etc.,

Carried Forward, $809,710.15

Brought Forward, $809,710.15

the railway company must have expensive shops and tools, and some proportion of the interest on the cost, and the depreciation and repairs of the shops and tools, is a burden properly chargeable to this account. The actual cash cost of the principal shops and tools has been $603,043.88. 5 per cent interest on this amount, and 5 per cent for depreciation and repairs upon the shops and tools, which is probably less than the actual cost, would be $60,304.38.

Say, 20 per cent of this amount is chargeable to freight cars.......... 12,060.86

In order to make these repairs, and the repairs on its locomotives, etc., the railway company must carry a large stock of material, and some proportion of the interest on the stock thus carried is chargeable to the cost of repairing freight cars. The average stock of material carried for

Carried Forward, $821,771.01

Brought Forward, $821,771.01

such repairs is $486,386.18, and it is estimated that 60 per cent of this stock is for freight car repairs, or, say, $291,831.60. The interest at 5 per cent is.......................... 14,591.55

In order to make repairs to freight cars every company must have side tracks at all its division points and many of the principal stations, specially devoted for standing freight cars for the purpose of being repaired, and used for no other purpose. The entire interest and cost of maintenance of these special side tracks constitute a burden chargeable to freight cars. Many of these side tracks, and indeed most of them, occupy land which has cost at the rate of $5,000 per acre, and some of it as much as $20,000 per acre. In addition to this land occupied by the side tracks there must be vacant, equally high priced land adjacent

Carried Forward, $836,362.56

Brought Forward, $836,362.56

for piling repair material, and storage houses. The Chicago Great Western Company has plants at ten such stations, and minor plants at other stations. I have not had time to get the exact mileage and quantity of land consumed by these special side tracks, but I think an estimate of 10 miles of track and sixty acres of land, in the aggregate, would not be too high an estimate. Reckoning the cost of the side tracks at only the cost of the rails and ties, $5,000 per mile, and land at $5,000 per acre, the actual cost would be $350,000. The interest at 5 per cent and say nothing of the cost of repairs, would amount to.................. 17,500.00

There are minor items, such as lighting and heating shops, fire insurance on both shops and cars which, in the aggregate, amount to large sums, but are distributed through the accounts in such a way that it is not easy to

Carried Forward, $853,862.56

Brought Forward,	$853,862.56
marshal them, and therefore in this calculation we make no account of them.	
The entire annual burden upon these major items amounts to.............	$853,862.56
The Chicago Great Western Company collected from other companies during the year for the use of its freight cars while on their line, in excess of the amount which it paid to other companies for the use of their freight cars on its line, the sum of..........	163,141.14
which, being deducted, leaves the aggregate burden upon the freight business of Chicago Great Western Railway Company, for the use of its own freight cars during the fiscal year ending June, 1905..................	$690,721.42

The mileage of loaded and empty freight cars of all classes owned by the company and by other railroad companies, after deducting the miles run by private car lines, amounted to 56,705,351 car miles. Dividing this quantity into the total burden ($690,721.42) makes the actual cost, per freight car mile, 1.23 cents for *use, depreciation and repairs of its own cars*, against the 1.1 cents paid to the packers for the *use, depreciation and repairs of refrigerator cars.* This extraordinary result is rendered more extraordinary by the fact that the average cost of the railway car is $563.86, while the average cost of a refrigerator car is $1,200.00.

The high per-mile cost for the use of the railway cars is the result of the small mileage which such cars make under existing conditions, averaging about 22 miles per day of 24 hours.

There are other burdens upon the transportation of live stock which do not pertain to the transportation of packing house products. Live stock is loaded to be delivered at the market before the close of the market hours. If, for any reason—which can by any means be construed as the fault of the company—the stock is not delivered before the close of the market hours and the market declines the next day, a claim for damages is made against the railway company. The damages paid on this account during the fiscal year 1905, by the Chicago Great Western Company amounted to $24,366.45, equal to an average of $1.61 per car.

The railway company, on this through live stock business, pays for loading the car at the stock-yards on the Missouri River, which constitutes a burden on the live stock business, of from 50 cents to $1.00 per car, without any corresponding burden on the packing house business, as the refrigerator cars are loaded and unloaded without expense to the railway company.

The railway company is also compelled to clean live stock cars at an expense of from 50 cents to $1.00 per car, without any corresponding burden upon the packing house product business, as refrigerator cars are cleaned by their owners.

During the hot weather the product has to be re-iced once in transit, but the expense is paid by the shipper.

During the hot weather the live stock is sprayed with cold water several times in transit, the whole expense of which is paid by the carrier. It is difficult to state the exact cost, but 25 cents per car is probably a close approximation.

In addition, in the shipment of live stock, the shipper is entitled to free transportation for one passenger for each two carloads shipped, from the point of shipment to Chicago on the train which carries the stock, and free return ticket on first class passenger trains.

Estimating the value at one-half regular rates, it would amount to $6.50 per car.

The principal burdens per car upon the THROUGH SHIPMENTS FROM MARKET TOWN TO MARKET TOWN, which are not alike on live stock and their products, can now be marshaled on the basis of a 500 mile haul from the Missouri River to Chicago, as follows:—

	Cattle	Hogs	Pkg. House Products	Fresh Meats
Use of car	$ 6.15	6.15	5.50	5 50
Damage on account of delay	1.61	1.61	....	....
Loading (average)	.75	.75	....	....
Cleaning cars (average)	.75	75	....	....
Icing and Spraying	.25	.25	....	....
Passenger Service	6.50	6.50	....	....
TOTAL	$16.01	16.01	5.50	5.50
As most of both classes of cars must be returned empty, it is perhaps fair to add the return use of cars	6.15	6.15	5.50	5.50
TOTAL	$22.16	22.16	11.00	11.00

It has already been stated that the average rate per cwt. on cattle is 18 cents; on hogs 19½ cents; and on their products is 20 cents; and that the aggregate of the unequal burdens is $22.16 per car on live stock, and $11.00 per car on their products. I now testify that the average pay load on the Chicago Great Western Railway of cattle is 21,513 lbs; of hogs 16,636 lbs. and the average weight ot the Chicago Great Western stock car is 27,500 lbs. The average pay load of packing house products is 31,632 lbs; of fresh meats 22,414 lbs; and the average weight of refrigerator cars in which they are hauled, including non-paying ice, is 41,000 lbs.

Based on these figures, the weight hauled and revenue per car received, and net rate per cwt. received for hauling the load and car, is found to be as follows:—

	Cattle		Hogs		Pkg. House Products		Fresh Meats	
	Wgt. lbs.	Rev. $	Wgt. lbs.	Rev. $	Wgt. lbs.	Rev. $	Wgt. bs.	Rev. $
Pay load...	21513	38.72	16636	32.02	31632	63.26	22414	44.82
Car...	27500	.....	27500	000	41000	000	41000	000
TOTAL...	49013	38.72	44136	32.02	72632	63.26	63414	44.82
Deduct unequal burdens as above...		22.16		22.16		11.00		11.00
Total weight hauled and net revenue per car received...	49013	16.56	44136	9.86	72632	52.26	63414	33.82
Net rate per cwt. received upon total pounds hauled...		3.39c		2.24c		7.19c		5.3c

It is admitted that the analysis shows that, based on the cost of carriage, the tariff rate on fresh meats should be higher than the tariff on packing house products, to be strictly and mathematically correct. But in making the contract which has controlled the tariff rates on packing house products and fresh meats for some years, and will control them for some years to come until the contract expires, in the hap-hazard by-guess way in which rates are usually made, a uniform rate of 20 cents was made on both products.

As the tariff rates per cwt. on live stock are less than the tariff rates per cwt. on the product, and as the analysis shows that the rates received for the one service, which is alike in both—the simple hauling—of the live stock from market to market is materially less than the rates received for hauling the products, and as this is the only principle which this action was brought to establish and enforce, these facts should entitle the case to be dismissed.

Up to this point, I have considered only the relation which actually exists, based on the cost of carriage, between the division of the rates on live stock and the division of the rates on packing house products, which are made between the railways which haul the animals into the markets on the Missouri River, and the railways which transport the live stock and their products from the markets of the Missouri river to Chicago. As has been pointed out, these are not rates, but divisions of rates made by the railways, as between themselves, in order to make symmetrical tariff rates possible on commodities transported over two or more lines, and, in their nature, the part of the rates which the railway east of the River accepts should be less than their full, or local, rate for the same distance.

The local rate, meaning by local rate the rate charged on animals that are picked up at local stations and hauled to Chicago, from the Missouri River to Chicago, 500 miles, is alike on both cattle and hogs, 23½ cents per cwt. There are no similar local rates on the products of animals, because the products are not picked up from station to station. Hence it is impossible to compare local rates on animals with local rates on the products of animals. For the reasons which have been stated, the divisional rate should be lower than the local rate. Hence, to compare a local rate on live stock with a divisional rate on the products would seem, evidently, unfair.

But in this case it is easy to show that the local rate on live stock—although higher per cwt. than the division of the rate on packing house products—is, as a matter of fact, based on the cost of hauling, lower than the packing house rate.

I will say that all of the special burdens which have been stated as applying to live stock shipments from markets to markets, apply to local shipments, except the loading of cars at stockyards at the Missouri River, which was given at 75 cents per car. Deducting this 75 cents from the total burden, leaves as the burdens which have been enumerated on live stock, ...$21.41 per car.

In addition, the railway company is obliged to furnish stock pens at each station where stock is loaded, for no other purpose than the shipment of live stock. These stock pens represent, in the aggregate, a very large investment, and the interest on their cost, and the cost of repairs, is an additional burden peculiar to the local shipment of local live stock. It is not easy to fish out from the vol-

Carried Forward, $21.41 per car.

Brought Forward, $21.41 per car.

uminous construction accounts the actual cost of these stock pens, but I happen to have data which gives a practical basis for such an estimate. In 1903 I built a line from Fort Dodge, Iowa, to Council Bluffs, a distance of 133 miles, on which 22 stock pens were built, and their actual cost was separated in the construction accounts. The actual cost of these 22 pens was $31,284.88, an average of $1,422.04 each. This does not include the cost of paving the floors, which will have to be done later, at an average cost of, probably, $1,000 each, an expenditure which the company has already made on many of its older pens. The Chicago Great Western System has 240 stations where there are stock pens. At an average cost of $1,422.04 each, without consider-

Carried Forward, $21.41 per car.

Brought Forward, $21.41 per car.

ing the cost of paving such floors as have already been paved, the aggregate investment would be $341,289.60. Five per cent interest on this amount, and 5 per cent for renewals and repairs, would amount to $34,128.96 per annum,– or, upon the shipments during the year 1905 of 15,134 cars, would amount to...................... 2.25 per car.

In addition, these stock pens have to be periodically cleaned by the railway company; stock cars have to be set, practically one at a time, to the pens to be loaded, which delays trains and adds materially to cost of transportation. It is impossible to state how much, but a low estimate would be,...................... .25 per car.

Total Special Burdens on local shipments of Live Stock,.........$23.91 per car.

Now, the analysis of the divisional rate shows that the 20–cent rate on the products of animals, after deducting the burdens, leaves a rate of 7.19 cents per cwt. for simply hauling the load, plus the weight of the car. Evidently, a rate on cattle, which, after deducting the burdens, would give the same rate of 7.19 cents per cwt. for simply hauling the load of cattle, plus the car, would be the mathematical equivalent of the 20-cent product rate. The average weight of a carload of cattle being 21,513 pounds, the weight of the car being 27,500 pounds, the two together would weigh 49,013 pounds.

7.19 cents per cwt. on 49,013 lbs. is...... $35.24
Add to this the special burdens, ... 23.91

Makes a revenue per car of..........$59.15 which must be collected on the 21,513 lbs. of cattle, constituting the load equal to 27.5 cents per cwt., which is 4 cents more than the local rate on cattle.

By the same mathematical process, the hog rate which would be equivalent to the 20-cent products rate would be 33.5 cents per cwt., which is 10 cents more than the local rate on hogs.

If the comparison is made with the lower rate, which the analysis shows the 20-cent product rate gives on shipments of fresh beef 5.3 cents instead of 7.19 cents, the mathematical equivalent of the lower rate is 23.19 cents on cattle and 28.43 cents on hogs.

The Interstate Commission, in the decision of this and other cases, seems to think that from supernatural reason, which they are unable to understand or explain, in all cases the manufactured products of all material should bear a higher rate per cwt. than the raw material from which it is manufactured.

As a matter of fact, the manufacturing of many materials produces a product more bulky, which makes the car load less, in proportion to the weight of the car, than the car load of the raw material. When such is the result, based on the cost of carriage the manufactured article should bear a higher rate per cwt. than the raw material. Such is usually the case when, say, iron is manufactured into machinery,—but when pig iron is manufactured into bar-iron or rails the bulk is not increased, and such a supposed rule should not obtain. So when live stock is changed into its products the bulk is not increased, but, in fact, is decreased, and consequently the product should bear a lower rate per cwt., based on the cost of carriage, than the live stock.

Relative rates between the raw material and the manufactured product, based on the cost of carriage, is a problem of facts and pure mathematics, and there is nothing occult or supernatural pertaining to the problem.

It is unfortunate that the men who make the tariffs of rates are not mathematicians, instead of fairly good guessers. They guess that if one rate is so much, another rate, in order to be relative, should be about so much. If the engineers who build railways should guess at the elevations of the grade at different stations, the same as the freight agents guess at the elevations of the rates at such stations, it would be as impossible to run trains over the road as it is now to run the freight business on tariff rates.

I desire to go on record as saying that, in my opinion, it is entirely possible to construct a tariff mathematically, on the basis of adding to the terminal expenses and special burdens of each class of shipments, practically constant quantities for the cost of hauling, which would be symmetrical and equitable and satisfactory both to the railways and the people. And that schedules of such rates could be printed in a form which would be so easily understood that any man of ordinary ability, by inspection of the schedules, could tell for himself the legal rate upon any shipment which he might desire to make.

The present Interstate Law requires such schedules to be made by the railways and if the railways fail to make such schedules the law requires the Interstate Commission to prescribe the form and compel the railways to adopt the form thus prescribed. But in this respect both the railways and the commission have failed to comply with the law.

The rate of speed at which freight must be moved is an important element effecting the cost of transportation, but as the Chicago Great Western Road's live stock and products are generally carried in the same train, and, generally speaking, practically the same rate of speed is required in the transportation of live stock and its products, it is not a factor in this analysis.

The next question is: Do the rates on live stock and its products, as now adjusted, discriminate in favor of the western markets as against the Chicago markets?

The following facts in respect to the movement of live stock on the Chicago Great Western Railway constitute evidence that they do not discriminate against Chicago.

CHICAGO GREAT WESTERN RAILWAY COMPANY.

Movement of Local and Through Live Stock during the Fiscal year ending June 1905.
Total, 15,134 Cars.

	To St. Paul No. Cars	To Omaha No. Cars	To St. Joe No. Cars	To Kan. City No. Cars	To Chicago No. Cars	Total No. Cars
From stations within 150 miles of St. Paul and more than 300 miles from Chicago.....	1023				1425	2448
From stations within 150 miles of Omaha and more than 350 miles from Chicago		1035			768	1803
From stations within 150 miles of St. Joseph and more than 372 miles from Chicago............			2735		415	3150
From stations within 150 miles of Kansas City and more than 440 miles from Chicago...........				105	164	269
From all other stations............	25	3	149	217	7070	7464
TOTALS........	1048	1038	2884	322	9842	15134
Percentage of the whole	6.9	6.9	19.0	2.1	65.1	100.0
Mileage of loaded cars	68,163	43,400	178,464	80,953	2,597,216	2,968,196
Average distance each loaded car was hauled, (miles)	66	43	62	250	263	197

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The following table shows the limited amount of through shipments from markets to markets made by the Chicago Great Western Company.

	To St. Paul No. Cars	To Omaha No. Cars	To St. Joe No. Cars	To Kan. City No. Cars	To Chicago No. Cars	Total No. Cars
From South St. Paul		3	33	15	1400	1451
From Kansas City....	1		20		14	35
From St. Joseph......				2	8	10
From Omaha	14			3	24	41
TOTALS..........	15	3	53	20	1446	1537
Mileage of loaded cars..................	3409	1044	16,837	10,054	612,686	644,030
Average distance each loaded car was hauled (miles)......	227	348	318	503	424	419

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